

## SEQUENCE LISTING

<110> TANOX, INC.  
FUNG, Sek Chung  
Moyle, Matthew

<120> TREATMENT OF CANCER USING NOVEL ANTI-IL13 ANTIBODIES

<130> TNX-1088

<150> US60/532,130

<151> 2003-12-23

<160> 152

<170> PatentIn version 3.2

<210> 1

<211> 114

<212> PRT

<213> Homo sapiens

<400> 1

Ser Pro Gly Pro Val Pro Pro Ser Thr Ala Leu Arg Glu Leu Ile Glu  
1 5 10 15

Glu Leu Val Asn Ile Thr Gln Asn Gln Lys Ala Pro Leu Cys Asn Gly  
20 25 30

Ser Met Val Trp Ser Ile Asn Leu Thr Ala Gly Met Tyr Cys Ala Ala  
35 40 45

Leu Glu Ser Leu Ile Asn Val Ser Gly Cys Ser Ala Ile Glu Lys Thr  
50 55 60

Gln Arg Met Leu Ser Gly Phe Cys Pro His Lys Val Ser Ala Gly Gln  
65 70 75 80

Phe Ser Ser Leu His Val Arg Asp Thr Lys Ile Glu Val Ala Gln Phe  
85 90 95

Val Lys Asp Leu Leu Leu His Leu Lys Lys Leu Phe Arg Glu Gly Arg  
100 105 110

Phe Asn

<210> 2

<211> 114

<212> PRT

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (13)..(13)

<223> Xaa can be any naturally occurring amino acid

<400> 2

Ser Pro Gly Pro Val Pro Pro Ser Thr Ala Leu Arg Xaa Leu Ile Glu  
 1 5 10 15  
 Glu Leu Val Asn Ile Thr Gln Asn Gln Lys Ala Pro Leu Cys Asn Gly  
 20 25 30  
 Ser Met Val Trp Ser Ile Asn Leu Thr Ala Gly Met Tyr Cys Ala Ala  
 35 40 45  
 Leu Glu Ser Leu Ile Asn Val Ser Gly Cys Ser Ala Ile Glu Lys Thr  
 50 55 60  
 Gln Arg Met Leu Ser Gly Phe Cys Pro His Lys Val Ser Ala Gly Gln  
 65 70 75 80  
 Phe Ser Ser Leu His Val Arg Asp Thr Lys Ile Glu Val Ala Gln Phe  
 85 90 95  
 Val Lys Asp Leu Leu Leu His Leu Lys Lys Leu Phe Arg Glu Gly Arg  
 100 105 110  
 Phe Asn

<210> 3  
 <211> 113  
 <212> PRT  
 <213> Murinae gen. sp.

<220>  
 <221> CHAIN  
 <222> (1)..(113)  
 <223> VARIABLE REGION OF LIGHT CHAIN OF MONOCLONAL ANTIBODY 228B/C  
 <400> 3

Asn Ile Val Leu Thr Gln Ser Pro Ala Ser Leu Ala Val Ser Leu Gly  
 1 5 10 15  
 Gln Arg Ala Thr Ile Ser Cys Arg Ala Ser Lys Ser Val Asp Ser Tyr  
 20 25 30  
 Gly Asn Ser Phe Met His Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro  
 35 40 45  
 Lys Leu Leu Ile Tyr Leu Ala Ser Asn Leu Glu Ser Gly Val Pro Ala  
 50 55 60  
 Arg Phe Ser Gly Ser Gly Ser Arg Thr Asp Phe Thr Leu Thr Ile Asp  
 65 70 75 80  
 Pro Val Glu Ala Asp Asp Ala Ala Ser Tyr Tyr Cys Gln Gln Asn Asn  
 85 90 95

Glu Asp Pro Arg Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg  
 100 105 110

Ala

<210> 4  
 <211> 118  
 <212> PRT  
 <213> Murinae gen. sp.

<220>  
 <221> CHAIN  
 <222> (1)..(118)  
 <223> VARIABLE REGION OF HEAVY CHAIN OF MONOCLONAL ANTIBODY 228B/C  
 <400> 4

Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Ala Pro Ser Gln  
 1 5 10 15

Ser Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu Asn Ala Tyr  
 20 25 30

Ser Val Asn Trp Val Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu  
 35 40 45

Gly Met Ile Trp Gly Asp Gly Lys Ile Val Tyr Asn Ser Ala Leu Lys  
 50 55 60

Ser Arg Leu Asn Ile Ser Lys Asp Ser Ser Lys Ser Gln Val Phe Leu  
 65 70 75 80

Lys Met Ser Ser Leu Gln Ser Asp Asp Thr Ala Arg Tyr Tyr Cys Ala  
 85 90 95

Gly Asp Gly Tyr Tyr Pro Tyr Ala Met Asp Asn Trp Gly His Gly Thr  
 100 105 110

Ser Val Thr Val Ser Ser  
 115

<210> 5  
 <211> 118  
 <212> PRT  
 <213> Murinae gen. sp.

<220>  
 <221> CHAIN  
 <222> (1)..(118)  
 <223> VARIABLE REGION OF LIGHT CHAIN OF MONOCLONAL ANTIBODY 228A-4  
 <400> 5

Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Pro Ser Gln  
 1 5 10 15

Ser Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu Thr Asp Tyr  
20 25 30

Asn Ile Asn Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu  
35 40 45

Gly Met Ile Trp Gly Asp Gly Ser Thr Ala Tyr Asn Ser Ala Leu Lys  
50 55 60

Ser Arg Leu Ser Ile Ser Lys Asp Asn Ser Lys Ser Gln Ile Phe Leu  
65 70 75 80

Lys Met Asn Ser Leu Gln Thr Glu Asp Thr Ala Arg Tyr Tyr Cys Ala  
85 90 95

Arg Asp Gly Tyr Phe Pro Tyr Ala Met Ala Tyr Trp Gly Gln Gly Thr  
100 105 110

Ser Val Thr Val Ser Ser  
115

<210> 6  
<211> 118  
<212> PRT  
<213> Murinae gen. sp.

<220>  
<221> CHAIN  
<222> (1)..(118)  
<223> VARIABLE REGION OF HEAVY CHAIN OF MONOCLONAL ANTIBODY 228A-4

<400> 6

Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Pro Ser Gln  
1 5 10 15

Ser Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu Thr Asp Tyr  
20 25 30

Asn Ile Asn Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu  
35 40 45

Gly Met Ile Trp Gly Asp Gly Ser Thr Ala Tyr Asn Ser Ala Leu Lys  
50 55 60

Ser Arg Leu Ser Ile Ser Lys Asp Asn Ser Lys Ser Gln Ile Phe Leu  
65 70 75 80

Lys Met Asn Ser Leu Gln Thr Glu Asp Thr Ala Arg Tyr Tyr Cys Ala  
85 90 95

Arg Asp Gly Tyr Phe Pro Tyr Ala Met Ala Tyr Trp Gly Gln Gly Thr  
100 105 110

Ser Val Thr Val Ser Ser  
115

<210> 7  
<211> 114  
<212> PRT  
<213> Murinae gen. sp.

<220>  
<221> CHAIN  
<222> (1)..(114)  
<223> VARIABLE REGION OF LIGHT CHAIN OF MONOCLONAL ANTIBODY 227-26

<220>  
<221> CHAIN  
<222> (1)..(114)  
<223> VARIABLE REGION OF LIGHT CHAIN OF MONOCLONAL ANTIBODY 227-26-1

<400> 7

Asp Val Leu Met Thr Gln Thr Pro Leu Ser Leu Pro Val Ser Leu Gly  
1 5 10 15

Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Ile Val His Ser  
20 25 30

Asn Gly Asn Thr Tyr Leu Gln Trp Tyr Leu Gln Lys Pro Gly Gln Ser  
35 40 45

Pro Lys Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro  
50 55 60

Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile  
65 70 75 80

Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Tyr Cys Phe Gln Gly  
85 90 95

Ser His Val Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys  
100 105 110

Arg Ala

<210> 8  
<211> 120  
<212> PRT  
<213> Murinae gen. sp.

<220>  
<221> CHAIN  
<222> (1)..(120)  
<223> VARIABLE REGION OF HEAVY CHAIN OF MONOCLONAL ANTIBODY 227-26-1

<400> 8

Gln Val Gln Leu Gln Gln Ser Gly Asp Asp Leu Val Leu Pro Gly Ala  
 1 5 10 15  
 Ser Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr  
 20 25 30  
 Trp Ile Asn Trp Ile Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile  
 35 40 45  
 Gly His Ile Ala Pro Gly Ser Gly Ser Thr Tyr Phe Asn Glu Met Phe  
 50 55 60  
 Lys Gly Lys Ala Thr Leu Thr Val Asp Thr Ser Ser Ser Thr Ala Tyr  
 65 70 75 80  
 Ile Gln Leu Ser Ser Leu Ser Ser Glu Asp Ser Ala Val Tyr Phe Cys  
 85 90 95  
 Ala Arg Ser Asp Ile Phe Leu Ser Tyr Ala Met Asp Tyr Trp Gly Gln  
 100 105 110  
 Gly Thr Ser Val Thr Val Ser Ser  
 115 120

<210> 9  
 <211> 50  
 <212> DNA  
 <213> ARTIFICIAL

<220>  
 <223> Forward oligonucleotide primer for a mutant IL13 sequence

<400> 9  
 aagctttccc caggccctgt gcctccctct acagccctca ggaagctcat 50

<210> 10  
 <211> 30  
 <212> DNA  
 <213> ARTIFICIAL

<220>  
 <223> Reverse oligo nucleotide primer of a mutant IL13 sequence

<400> 10  
 ctcgaggttg aaccgtccct cgcgaaaaag 30

<210> 11  
 <211> 22  
 <212> DNA  
 <213> ARTIFICIAL

<220>  
 <223> Forward degenerate oligonucleotide primer for monkey IL13

<400> 11  
 gyyctrggcy ycatggcgct yt 22

<210> 12

<211> 25  
 <212> DNA  
 <213> ARTIFICIAL

<220>  
 <223> Reverse degenerate oligonucleotide primer for monkey IL13

<400> 12  
 tttcagttga accgtccyty gcgaa 25

<210> 13  
 <211> 399  
 <212> DNA  
 <213> Macaca fascicularis

<400> 13  
 atggcgctct tggtgaccat ggctcattgct ctccattgcc tcggcggcctt tgcctcccca 60  
 agccctgtgc ctccctctac agccctcaag gagctcattg aggagctggc caacatcacc 120  
 cagaaccaga aggccccgct ctgcaatggc agcatgggtg ggagcatcaa cctgacagct 180  
 ggcgtgtact gtgcagccct ggaatccctg atcaacgtgt caggctgcag tgccatcgag 240  
 aagacccaga ggatgctgaa cggattctgc ccgcacaagg tctcagctgg gcagttttcc 300  
 agcttgctgtg tccgagacac caaaatcgag gtggcccgag ttgtaaagga cctgctcgta 360  
 catttaaaga aactttttcg caatggacgg ttcaactga 399

<210> 14  
 <211> 34  
 <212> DNA  
 <213> ARTIFICIAL

<220>  
 <223> Forward oligonucleotide primer for cynomologus monkey IL13

<400> 14  
 aagcttcacc atggcgctct tggtgaccat ggctc 34

<210> 15  
 <211> 40  
 <212> DNA  
 <213> ARTIFICIAL

<220>  
 <223> Reverse oligonucleotide primer for cynomologus monkey IL13

<400> 15  
 tcacaagatc tgggctcctc gaggttgaac cgtccattgc 40

<210> 16  
 <211> 23  
 <212> DNA  
 <213> ARTIFICIAL

<220>  
 <223> Forward oligonucleotide primer for Fc gamma1

<400> 16  
 ctcgaggagc ccagatcttg tga 23

<210> 17

<211> 35  
 <212> DNA  
 <213> ARTIFICIAL

<220>  
 <223> Reverse oligonucleotide primer for Fc gamma 1

<400> 17  
 gctctagagc ctcatttacc cggagacagg gagag

35

<210> 18  
 <211> 8  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> EPITOPE BINDING SITE

<400> 18  
 Glu Ser Leu Ile Asn Val Ser Gly  
 1 5

<210> 19  
 <211> 12  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> EPITOPE BINDING SITE

<400> 19  
 Tyr Cys Ala Ala Leu Glu Ser Leu Ile Asn Val Ser  
 1 5 10

<210> 20  
 <211> 23  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> FRL1 228B/C-1

<400> 20  
 Asn Ile Val Leu Thr Gln Ser Pro Ala Ser Leu Ala Val Ser Leu Gly  
 1 5 10 15

Gln Arg Ala Thr Ile Ser Cys  
 20

<210> 21  
 <211> 23  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> FRL1 TEMPLATE HT2

<400> 21  
 Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ser Val Ser Leu Gly  
 1 5 10 15



Glu Arg Ala Thr Ile Asn Cys  
20

<210> 22  
<211> 23  
<212> PRT  
<213> ARTIFICIAL

<220>  
<223> FRL1 VARIANT B

<400> 22

Asp Ile Val Met Thr Gln Ser Pro Ala Ser Leu Ala Val Ser Leu Gly  
1 5 10 15

Glu Arg Ala Thr Ile Asn Cys  
20

<210> 23  
<211> 23  
<212> PRT  
<213> ARTIFICIAL

<220>  
<223> FRL1 VARIANT J

<400> 23

Asp Ile Val Leu Thr Gln Ser Pro Asp Ser Leu Ala Val Ser Leu Gly  
1 5 10 15

Glu Arg Ala Thr Ile Asn Cys  
20

<210> 24  
<211> 23  
<212> PRT  
<213> ARTIFICIAL

<220>  
<223> FRL1 VARIANT L

<400> 24

Asp Ile Val Leu Thr Gln Ser Pro Ala Ser Leu Ser Val Ser Leu Gly  
1 5 10 15

Glu Arg Ala Thr Ile Asn Cys  
20

<210> 25  
<211> 23  
<212> PRT  
<213> ARTIFICIAL

<220>  
<223> FRL1 VARIANT HT-NEW #300

<400> 25

Asp Ile Val Leu Thr Gln Ser Pro Asp Ser Leu Ser Val Ser Leu Gly  
 1 5 10 15

Glu Arg Ala Thr Ile Asn Cys  
 20

<210> 26  
 <211> 23  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> FRL1 VARIANT HT2-DP27 #29

<400> 26

Asp Ile Val Leu Thr Gln Ser Pro Val Ser Leu Ala Val Ser Leu Gly  
 1 5 10 15

Glu Arg Ala Thr Ile Asn Cys  
 20

<210> 27  
 <211> 23  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> FRL1 VARIANT HT2-DP27 #53

<400> 27

Asp Ile Val Met Thr Gln Ser Pro Ala Ser Leu Ser Val Ser Leu Gly  
 1 5 10 15

Glu Arg Ala Thr Ile Asn Cys  
 20

<210> 28  
 <211> 23  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> FRL1 VARIANT HT2-DP27 #66

<400> 28

Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ala Val Ser Leu Gly  
 1 5 10 15

Glu Arg Ala Thr Ile Asn Cys  
 20

<210> 29  
 <211> 15  
 <212> PRT  
 <213> ARTIFICIAL

<220>

<223> FRL2 228B/C

<400> 29

Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu Ile Tyr  
1 5 10 15

<210> 30

<211> 32

<212> PRT

<213> ARTIFICIAL

<220>

<223> FRL3 288 B/C

<400> 30

Gly Val Pro Ala Arg Phe Ser Gly Ser Gly Ser Arg Thr Asp Phe Thr  
1 5 10 15

Leu Thr Ile Asp Pro Val Glu Ala Asp Asp Ala Ala Ser Tyr Tyr Cys  
20 25 30

<210> 31

<211> 32

<212> PRT

<213> ARTIFICIAL

<220>

<223> FRL3 HT2

<400> 31

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr  
1 5 10 15

Leu Thr Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys  
20 25 30

<210> 32

<211> 32

<212> PRT

<213> ARTIFICIAL

<220>

<223> FRL3 VARIANT B

<400> 32

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr  
1 5 10 15

Leu Thr Ile Asp Pro Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys  
20 25 30

<210> 33

<211> 32

<212> PRT

<213> ARTIFICIAL

<220>

<223> FRL3 VARIANT J

&lt;400&gt; 33

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr  
 1 5 10 15

Leu Thr Ile Asp Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys  
 20 25 30

&lt;210&gt; 34

&lt;211&gt; 32

&lt;212&gt; PRT

&lt;213&gt; ARTIFICIAL

&lt;220&gt;

&lt;223&gt; FRL3 VARIANT L

&lt;400&gt; 34

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Arg Thr Asp Phe Thr  
 1 5 10 15

Leu Thr Ile Asp Pro Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys  
 20 25 30

&lt;210&gt; 35

&lt;211&gt; 32

&lt;212&gt; PRT

&lt;213&gt; ARTIFICIAL

&lt;220&gt;

&lt;223&gt; FRL3 VARIANT N

&lt;400&gt; 35

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Arg Thr Asp Phe Thr  
 1 5 10 15

Leu Thr Ile Asp Pro Val Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys  
 20 25 30

&lt;210&gt; 36

&lt;211&gt; 32

&lt;212&gt; PRT

&lt;213&gt; ARTIFICIAL

&lt;220&gt;

&lt;223&gt; FRL3 VARIANT P

&lt;400&gt; 36

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Arg Thr Asp Phe Thr  
 1 5 10 15

Leu Thr Ile Asp Ser Val Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys  
 20 25 30

&lt;210&gt; 37

&lt;211&gt; 32

&lt;212&gt; PRT

&lt;213&gt; ARTIFICIAL

&lt;220&gt;

&lt;223&gt; FRL3 VARIANT R

&lt;400&gt; 37

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Arg Thr Asp Phe Thr  
 1 5 10 15

Leu Thr Ile Ser Ser Val Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys  
 20 25 30

&lt;210&gt; 38

&lt;211&gt; 32

&lt;212&gt; PRT

&lt;213&gt; ARTIFICIAL

&lt;220&gt;

&lt;223&gt; FRL3 VARIANT HT2-NEW #1

&lt;400&gt; 38

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Arg Thr Asp Phe Thr  
 1 5 10 15

Leu Thr Ile Ser Pro Val Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys  
 20 25 30

&lt;210&gt; 39

&lt;211&gt; 32

&lt;212&gt; PRT

&lt;213&gt; ARTIFICIAL

&lt;220&gt;

&lt;223&gt; FRL3 VARIANT HT2-NEW #9

&lt;400&gt; 39

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr  
 1 5 10 15

Leu Thr Ile Ser Ser Val Glu Ala Glu Asp Val Ala Val Tyr Tyr Cys  
 20 25 30

&lt;210&gt; 40

&lt;211&gt; 32

&lt;212&gt; PRT

&lt;213&gt; ARTIFICIAL

&lt;220&gt;

&lt;223&gt; FRL3 VARIANT HT2-NEW #14

&lt;400&gt; 40

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Arg Thr Asp Phe Thr  
 1 5 10 15

Leu Thr Ile Ser Pro Val Glu Ala Glu Asp Val Ala Val Tyr Tyr Cys  
 20 25 30

&lt;210&gt; 41

<211> 32  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> FRL3 HT2-NEW #21

<400> 41

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr  
 1 5 10 15

Leu Thr Ile Ser Ser Val Glu Ala Glu Asp Val Ala Val Tyr Tyr Cys  
 20 25 30

<210> 42  
 <211> 32  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> FRL3 VARIANT HT2-NEW # 67

<400> 42

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr  
 1 5 10 15

Leu Thr Ile Asp Pro Leu Glu Ala Glu Asp Val Ala Val Tyr Tyr Cys  
 20 25 30

<210> 43  
 <211> 32  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> FRL3 VARIANT HT2-NEW #74

<400> 43

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr  
 1 5 10 15

Leu Thr Ile Ser Pro Val Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys  
 20 25 30

<210> 44  
 <211> 32  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> FRL3 VARIANT HT2-NEW #78

<400> 44

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr  
 1 5 10 15

Leu Thr Ile Asp Ser Val Glu Ala Glu Asp Val Ala Val Tyr Tyr Cys  
 20 25 30

<210> 45  
 <211> 32  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> FRL3 VARIANT HT2-NEW #322

<400> 45

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Arg Thr Asp Phe Thr  
 1 5 10 15

Leu Thr Ile Asp Ser Leu Glu Ala Glu Asp Val Ala Val Tyr Tyr Cys  
 20 25 30

<210> 46  
 <211> 32  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> FRL3 VARIANT HT2-NEW #162

<400> 46

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr  
 1 5 10 15

Leu Thr Ile Asp Pro Val Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys  
 20 25 30

<210> 47  
 <211> 32  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> FRL3 VARIANT HT2-DP27 # 7

<400> 47

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr  
 1 5 10 15

Leu Thr Ile Asp Ser Val Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys  
 20 25 30

<210> 48  
 <211> 32  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> FRL3 VARIANT HT2-DP27 #57

<400> 48

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr  
 1 5 10 15

Leu Thr Ile Ser Pro Val Glu Ala Glu Asp Val Ala Val Tyr Tyr Cys  
                   20                                  25                                  30

<210> 49  
 <211> 32  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> FRL3 VARIANT HT2-DP27 #73  
 <400> 49

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr  
   1                  5                                  10                                  15

Leu Thr Ile Asp Pro Val Glu Ala Glu Asp Val Ala Val Tyr Tyr Cys  
                   20                                  25                                  30

<210> 50  
 <211> 32  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> FRL3 VARIANT HT2-DP27 #92  
 <400> 50

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr  
   1                  5                                  10                                  15

Leu Thr Ile Asp Thr Val Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys  
                   20                                  25                                  30

<210> 51  
 <211> 32  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> FRL3 VARIANT HT2-DP27 #118  
 <400> 51

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Arg Thr Asp Phe Thr  
   1                  5                                  10                                  15

Leu Thr Ile Ser Pro Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys  
                   20                                  25                                  30

<210> 52  
 <211> 32  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> FRL3 VARIANT HT2-DP27 #123  
 <400> 52



Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Arg Thr Asp Phe Thr  
 1 5 10 15

Leu Thr Ile Ser Ser Leu Glu Ala Glu Asp Val Ala Val Tyr Tyr Cys  
 20 25 30

<210> 53  
 <211> 32  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> FRL3 VARIANT HT2-DP27 #83

<400> 53

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Arg Thr Asp Phe Thr  
 1 5 10 15

Leu Thr Ile Asp Pro Leu Glu Ala Glu Asp Val Ala Val Tyr Tyr Cys  
 20 25 30

<210> 54  
 <211> 32  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> FRL3 VARIANT HT2-DP27 #135

<400> 54

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr  
 1 5 10 15

Leu Thr Ile Ser Ser Leu Glu Ala Glu Asp Val Ala Val Tyr Tyr Cys  
 20 25 30

<210> 55  
 <211> 32  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> FRL3 VARIANT HT2-DP27 #273

<400> 55

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr  
 1 5 10 15

Leu Thr Ile Ser Ser Val Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys  
 20 25 30

<210> 56  
 <211> 32  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> FRL3 VARIANT HT2-DP27 #301

&lt;400&gt; 56

Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr  
 1 5 10 15

Leu Thr Ile Ser Pro Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys  
 20 25 30

&lt;210&gt; 57

&lt;211&gt; 12

&lt;212&gt; PRT

&lt;213&gt; ARTIFICIAL

&lt;220&gt;

&lt;223&gt; FRL4 228 B/C

&lt;400&gt; 57

Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg Ala  
 1 5 10

&lt;210&gt; 58

&lt;211&gt; 11

&lt;212&gt; PRT

&lt;213&gt; ARTIFICIAL

&lt;220&gt;

&lt;223&gt; FRL4 HT2

&lt;400&gt; 58

Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg  
 1 5 10

&lt;210&gt; 59

&lt;211&gt; 11

&lt;212&gt; PRT

&lt;213&gt; ARTIFICIAL

&lt;220&gt;

&lt;223&gt; FRL4 VARIANT B

&lt;400&gt; 59

Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg  
 1 5 10

&lt;210&gt; 60

&lt;211&gt; 30

&lt;212&gt; PRT

&lt;213&gt; ARTIFICIAL

&lt;220&gt;

&lt;223&gt; FRH1 228 B/C

&lt;400&gt; 60

Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Ala Pro Ser Gln  
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Ser Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu Asn  
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<400> 61

Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr Gln  
 1 5 10 15

Thr Leu Thr Leu Thr Cys Thr Phe Ser Gly Phe Ser Leu Ser  
 20 25 30

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<400> 62

Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Arg Pro Ser Gln  
 1 5 10 15

Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Ser Thr Phe Ser  
 20 25 30

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<400> 63

Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Arg Pro Ser Gln  
 1 5 10 15

Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Ser Thr Phe Ser  
 20 25 30

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<400> 64

Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr Gln  
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Thr Leu Thr Leu Thr Cys Thr Val Ser Gly Phe Ser Leu Asn  
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Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr Gln  
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Thr Leu Thr Leu Thr Cys Thr Val Ser Gly Phe Ser Leu Ser  
                   20                  25                  30

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Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr Gln  
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Thr Leu Thr Leu Thr Cys Thr Phe Ser Gly Phe Ser Leu Asn  
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<220>  
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Trp Val Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu Gly  
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Trp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu Trp Leu Ala  
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<210> 69  
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<400> 69

Trp Val Arg Gln Pro Pro Gly Arg Gly Leu Glu Trp Ile Gly  
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Trp Val Arg Gln Pro Pro Gly Lys Ala Leu Glu Trp Leu Gly  
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<400> 71

Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu Gly  
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<210> 72  
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<400> 72

Trp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu Trp Leu Gly  
 1 5 10

<210> 73  
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<400> 73

Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu Ala  
 1 5 10

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<400> 74

Trp Val Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu Ala  
 1 5 10

<210> 75  
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<400> 75

Trp Val Arg Gln Pro Pro Gly Lys Ala Leu Glu Trp Leu Ala  
 1 5 10

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<220>  
 <223> FRH3 228 B/C

<400> 76

Arg Leu Asn Ile Ser Lys Asp Ser Ser Lys Ser Gln Val Phe Leu Lys  
 1 5 10 15

Met Ser Ser Leu Gln Ser Asp Asp Thr Ala Arg Tyr Tyr Cys Ala Gly  
 20 25 30

<210> 77  
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<400> 77

Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val Val Leu Thr  
 1 5 10 15

Met Thr Asn Met Asp Pro Val Asp Thr Ala Thr Tyr Tyr Cys Ala Arg  
 20 25 30

<210> 78  
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&lt;220&gt;

&lt;223&gt; FRH3 NEW

&lt;400&gt; 78

Arg Val Thr Met Leu Lys Asp Thr Ser Lys Asn Gln Phe Ser Leu Arg  
 1 5 10 15

Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala Arg  
 20 25 30

&lt;210&gt; 79

&lt;211&gt; 32

&lt;212&gt; PRT

&lt;213&gt; ARTIFICIAL

&lt;220&gt;

&lt;223&gt; FRH3 VARIANT 1

&lt;400&gt; 79

Arg Leu Thr Ile Ser Lys Asp Ser Ser Lys Asn Gln Val Val Leu Thr  
 1 5 10 15

Met Thr Asn Met Asp Pro Val Asp Thr Ala Thr Tyr Tyr Cys Ala Gly  
 20 25 30

&lt;210&gt; 80

&lt;211&gt; 32

&lt;212&gt; PRT

&lt;213&gt; ARTIFICIAL

&lt;220&gt;

&lt;223&gt; FRH3 VARIANT 3

&lt;400&gt; 80

Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val Val Leu Thr  
 1 5 10 15

Met Thr Asn Met Asp Pro Val Asp Thr Ala Thr Tyr Tyr Cys Ala Gly  
 20 25 30

&lt;210&gt; 81

&lt;211&gt; 32

&lt;212&gt; PRT

&lt;213&gt; ARTIFICIAL

&lt;220&gt;

&lt;223&gt; FRH3 VARIANT 4

&lt;400&gt; 81

Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val Val Leu Thr  
 1 5 10 15

Met Thr Asn Met Asp Pro Val Asp Thr Ala Arg Tyr Tyr Cys Ala Gly  
 20 25 30

&lt;210&gt; 82

<211> 32  
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 <400> 82

Arg Leu Asn Met Ser Lys Asp Thr Ser Lys Asn Gln Phe Phe Leu Arg  
 1 5 10 15  
 Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala Gly  
 20 25 30

<210> 83  
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Arg Leu Asn Met Ser Lys Asp Thr Ser Lys Asn Gln Phe Phe Leu Arg  
 1 5 10 15  
 Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Arg Tyr Tyr Cys Ala Gly  
 20 25 30

<210> 84  
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Arg Val Asn Met Ser Lys Asp Thr Ser Lys Asn Gln Phe Ser Leu Arg  
 1 5 10 15  
 Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala Arg  
 20 25 30

<210> 85  
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Arg Leu Asn Ile Ser Lys Asp Thr Ser Lys Asn Gln Val Val Leu Thr  
 1 5 10 15  
 Met Thr Asn Met Asp Pro Val Asp Thr Ala Arg Tyr Tyr Cys Ala Arg  
 20 25 30



<210> 86  
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<400> 86

Arg Leu Thr Ile Ser Lys Asp Ile Ser Lys Asn Gln Val Val Leu Thr  
 1 5 10 15

Met Thr Asn Met Asp Pro Val Asp Thr Ala Arg Tyr Tyr Cys Ala Gly  
 20 25 30

<210> 87  
 <211> 32  
 <212> PRT  
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<220>  
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<400> 87

Arg Leu Asn Ile Ser Lys Asp Thr Ser Lys Asn Gln Val Val Leu Thr  
 1 5 10 15

Met Thr Asn Met Asp Pro Val Asp Thr Ala Thr Tyr Tyr Cys Ala Gly  
 20 25 30

<210> 88  
 <211> 32  
 <212> PRT  
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<220>  
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<400> 88

Arg Leu Asn Ile Ser Lys Asp Ser Ser Lys Asn Gln Val Val Leu Thr  
 1 5 10 15

Met Thr Asn Met Asp Pro Val Asp Thr Ala Thr Tyr Tyr Cys Ala Gly  
 20 25 30

<210> 89  
 <211> 32  
 <212> PRT  
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<220>  
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<400> 89

Arg Leu Asn Ile Ser Lys Asp Thr Ser Lys Asn Gln Val Val Leu Thr  
 1 5 10 15

Met Thr Asn Met Asp Pro Val Asp Thr Ala Thr Tyr Tyr Cys Ala Arg  
           20                                  25                                  30

<210> 90  
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 <400> 90

Arg Leu Thr Ile Ser Lys Asp Ser Ser Lys Asn Gln Val Val Leu Thr  
   1                  5                                  10                                  15

Met Thr Asn Met Asp Pro Val Asp Thr Ala Arg Tyr Tyr Cys Ala Gly  
           20                                  25                                  30

<210> 91  
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 <400> 91

Trp Gly His Gly Thr Ser Val Thr Val Ser Ser  
   1                  5                                  10

<210> 92  
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 <212> PRT  
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<220>  
 <223> FRH4 DP27  
 <400> 92

Trp Gly Gln Gly Ser Leu Val Thr Val Ser Ser  
   1                  5                                  10

<210> 93  
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 <212> PRT  
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 <400> 93

Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ser Val Ser Leu Gly  
   1                  5                                  10                                  15

Glu Arg Ala Thr Ile Asn Cys Arg Ala Ser Lys Ser Val Asp Ser Tyr  
           20                                  25                                  30

Gly Gln Ser Phe Met His Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro  
                   35                                  40                                  45

Lys Leu Leu Ile Tyr Leu Ala Ser Asn Leu Glu Ser Gly Val Pro Asp  
           50                                  55                                  60

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser  
   65                                  70                                  75                                  80

Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln Asn Ala  
                                   85                                  90                                  95

Glu Asp Pro Arg Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg  
                   100                                  105                                  110

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<220>  
 <223> VARIABLE HEAVY CHAIN OF CL5  
 <400> 94

Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr Gln  
   1                                  5                                  10                                  15

Thr Leu Thr Leu Thr Cys Thr Gly Ser Gly Phe Ser Leu Ser Ala Tyr  
                   20                                  25                                  30

Ser Val Asn Trp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu Trp Leu  
                   35                                  40                                  45

Ala Met Ile Trp Gly Asp Gly Lys Ile Val Tyr Asn Ser Ala Leu Lys  
           50                                  55                                  60

Ser Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val Val Leu  
   65                                  70                                  75                                  80

Thr Met Thr Asn Met Asp Pro Val Asp Thr Ala Thr Tyr Tyr Cys Ala  
                   85                                  90                                  95

Val Asp Gly Tyr Tyr Pro Tyr Ala Met Lys Asn Trp Gly Gln Gly Ser  
                   100                                  105                                  110

Leu Val Thr Val Ser Ser  
           115

<210> 95  
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 <212> PRT  
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<220>  
 <223> VARIABLE LIGHT CHAIN OF CL-13

&lt;400&gt; 95

Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ser Val Ser Leu Gly  
 1 5 10 15  
 Glu Arg Ala Thr Ile Asn Cys Arg Ala Ser Lys Ser Val Asp Ser Tyr  
 20 25 30  
 Gly Gln Ser Phe Met His Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro  
 35 40 45  
 Lys Leu Leu Ile Tyr Leu Ala Ser Asn Leu Glu Ser Gly Val Pro Asp  
 50 55 60  
 Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser  
 65 70 75 80  
 Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln Asn Asn  
 85 90 95  
 Glu Asp Pro Arg Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg  
 100 105 110

&lt;210&gt; 96

&lt;211&gt; 118

&lt;212&gt; PRT

&lt;213&gt; ARTIFICIAL

&lt;220&gt;

&lt;223&gt; VARIABLE HEAVY CHAIN OF CL-13

&lt;400&gt; 96

Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr Gln  
 1 5 10 15  
 Thr Leu Thr Leu Thr Cys Thr Gly Ser Gly Phe Ser Leu Ser Ala Lys  
 20 25 30  
 Ser Val Asn Trp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu Trp Leu  
 35 40 45  
 Ala Met Ile Trp Gly Asp Gly Lys Ile Val Tyr Asn Ser Ala Leu Lys  
 50 55 60  
 Ser Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val Val Leu  
 65 70 75 80  
 Thr Met Thr Asn Met Asp Pro Val Asp Thr Ala Thr Tyr Tyr Cys Ala  
 85 90 95  
 Val Asp Gly Tyr Tyr Pro Tyr Ala Met Ser Asn Trp Gly Gln Gly Ser  
 100 105 110

Leu Val Thr Val Ser Ser  
115

<210> 97  
<211> 112  
<212> PRT  
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<220>  
<223> VARIABLE LIGHT CHAIN OF CL-50

<400> 97

Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ser Val Ser Leu Gly  
1 5 10 15

Glu Arg Ala Thr Ile Asn Cys Arg Ala Ser Lys Ser Val Asp Ser Tyr  
20 25 30

Gly Gln Ser Phe Met His Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro  
35 40 45

Lys Leu Leu Ile Tyr Leu Ala Ser Asn Leu Glu Ser Gly Val Pro Asp  
50 55 60

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser  
65 70 75 80

Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln Asn Ala  
85 90 95

Glu Asp Pro Arg Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg  
100 105 110

<210> 98  
<211> 118  
<212> PRT  
<213> ARTIFICIAL

<220>  
<223> VARIABLE HEAVY CHAIN OF CL-50

<400> 98

Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr Gln  
1 5 10 15

Thr Leu Thr Leu Thr Cys Thr Gly Ser Gly Phe Ser Leu Ser Ala Lys  
20 25 30

Ser Val Asn Trp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu Trp Leu  
35 40 45

Ala Met Ile Trp Gly Asp Gly Lys Ile Val Tyr Asn Ser Ala Leu Lys  
50 55 60

Ser Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val Val Leu  
Page 29



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<220>  
<223> CDR-L1 VARIANT 4

<400> 103

Arg Ala Ser Lys Ser Val Asp Ser Tyr Gly Asn Ser Phe Leu His  
1 5 10 15

<210> 104  
<211> 7  
<212> PRT  
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<220>  
<223> CDR-L2 228B/C

<400> 104

Leu Ala Ser Asn Leu Glu Ser  
1 5

<210> 105  
<211> 7  
<212> PRT  
<213> ARTIFICIAL

<220>  
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<400> 105

Leu Ala Ser Asn Leu Asn Ser  
1 5

<210> 106  
<211> 7  
<212> PRT  
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<220>  
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<400> 106

Leu Ala Ser Asn Leu Gln Ser  
1 5

<210> 107  
<211> 7  
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<220>  
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<400> 107

Leu Ala Thr Asn Leu Glu Ser

1

5

<210> 108  
<211> 7  
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<220>  
<223> CDR-L2 VARIANT 4

<400> 108

Leu Ala Ser Asn Leu Lys Ser  
1 5

<210> 109  
<211> 7  
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<220>  
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<400> 109

Leu Ala Ser Asn Leu Glu Lys  
1 5

<210> 110  
<211> 7  
<212> PRT  
<213> ARTIFICIAL

<220>  
<223> CDR-L2 VARIANT 6

<400> 110

Leu Ala Ser Arg Leu Glu Ser  
1 5

<210> 111  
<211> 7  
<212> PRT  
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<220>  
<223> CDR-L2 VARIANT 7

<400> 111

Leu Ala Ser Asn Leu His Ser  
1 5

<210> 112  
<211> 7  
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<220>  
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<400> 112



Leu Ala Ser Asn Leu Ser Ser  
1 5

<210> 113  
<211> 7  
<212> PRT  
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<220>  
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<400> 113

Leu Ala Ser Phe Leu Glu Ser  
1 5

<210> 114  
<211> 7  
<212> PRT  
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<220>  
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<400> 114

Leu Ala Asn Asn Leu Glu Ser  
1 5

<210> 115  
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<220>  
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<400> 115

Gln Gln Asn Asn Glu Asp Pro Arg Thr  
1 5

<210> 116  
<211> 9  
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<400> 116

Gln Gln Asn Ala Glu Asp Pro Arg Thr  
1 5

<210> 117  
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<400> 117

Ala Tyr Ser Val Asn  
1 5

<210> 118  
<211> 5  
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<400> 118

Ala Lys Ser Val Asn  
1 5

<210> 119  
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<400> 119

Ala Asn Ser Val Asn  
1 5

<210> 120  
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<400> 120

Gly Tyr Ser Val Asn  
1 5

<210> 121  
<211> 5  
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<400> 121

Ala His Ser Val Asn  
1 5

<210> 122  
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<220>  
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<400> 122

Ala Arg Ser Val Asn  
1 5

<210> 123

<211> 16

<212> PRT

<213> ARTIFICIAL

<220>

<223> CDR-H2 228B/C

<400> 123

Met Ile Trp Gly Asp Gly Lys Ile Val Tyr Asn Ser Ala Leu Lys Ser  
1 5 10 15

<210> 124

<211> 16

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<213> ARTIFICIAL

<220>

<223> CDR-H2 VARIANT 1

<400> 124

Met Ile Trp Gly Asp Gly Lys Ile Ser Tyr Asn Ser Ala Leu Lys Ser  
1 5 10 15

<210> 125

<211> 16

<212> PRT

<213> ARTIFICIAL

<220>

<223> CDR-H2 VARIANT 2

<400> 125

Met Ile Trp Gly Asp Gly Lys Ile Val Tyr Asn Ser Ala Leu Glu Ser  
1 5 10 15

<210> 126

<211> 16

<212> PRT

<213> ARTIFICIAL

<220>

<223> CDR-H2 VARIANT 3

<400> 126

Met Ile Trp Gly Asp Gly Lys Ile Val Tyr Asn Ser Ala Leu Lys Ser  
1 5 10 15

<210> 127

<211> 16

<212> PRT

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<223> CDR-H2 VARIANT 4

&lt;400&gt; 127

Met Ile Trp Gly Asp Gly Lys Ile Val Tyr Asn Ser Asp Leu Lys Ser  
1 5 10 15

&lt;210&gt; 128

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; ARTIFICIAL

&lt;220&gt;

&lt;223&gt; CDR-H2 VARIANT 5

&lt;400&gt; 128

Met Ile Trp Gly Asp Gly Lys Val Val Tyr Asn Ser Ala Leu Lys Ser  
1 5 10 15

&lt;210&gt; 129

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; ARTIFICIAL

&lt;220&gt;

&lt;223&gt; CDR-H2 VARIANT 6

&lt;400&gt; 129

Met Ile Trp Gly Asp Gly Lys Ile Val Tyr Asn Ser Glu Leu Lys Ser  
1 5 10 15

&lt;210&gt; 130

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; ARTIFICIAL

&lt;220&gt;

&lt;223&gt; CDR-H2 VARIANT 7

&lt;400&gt; 130

Met Ile Trp Gly Asp Gly Lys Ile Ala Tyr Asn Ser Ala Leu Lys Ser  
1 5 10 15

&lt;210&gt; 131

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; ARTIFICIAL

&lt;220&gt;

&lt;223&gt; CDR-H2 VARIANT 8

&lt;400&gt; 131

Met Ile Trp Gly Asp Gly Lys Ile Val Tyr Asn Ser Ala Leu Lys Glu  
1 5 10 15

&lt;210&gt; 132

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; ARTIFICIAL

&lt;220&gt;

<223> CDR-H2 VARIANT 9

<400> 132

Met Val Trp Gly Asp Gly Lys Ile Val Tyr Asn Ser Ala Leu Lys Ser  
1 5 10 15

<210> 133

<211> 16

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<223> CDR-H2 VARIANT 10

<400> 133

Met Ile Trp Gly Asp Gly Lys Ile Val Tyr Asn Ser Ala Leu Ala Ser  
1 5 10 15

<210> 134

<211> 16

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<400> 134

Met Ile Trp Gly Asp Gly Lys Lys Val Tyr Asn Ser Ala Leu Lys Ser  
1 5 10 15

<210> 135

<211> 10

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<400> 135

Asp Gly Tyr Tyr Pro Tyr Ala Met Asp Asn  
1 5 10

<210> 136

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<223> CDR-H3 VARIANT 1

<400> 136

Asp Gly Arg Tyr Pro Tyr Ala Met Asp Asn  
1 5 10

<210> 137

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<400> 137

Asp Gly Tyr Tyr Pro Tyr Ala Met Lys Asn  
1 5 10

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<223> CDR-H3 VARIANT 3  
<400> 138

Asp Gly Arg Tyr Pro Tyr Ala Met Lys Asn  
1 5 10

<210> 139  
<211> 10  
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<213> ARTIFICIAL

<220>  
<223> CDR-H3 VARIANT 4  
<400> 139

Asp Gly Tyr Tyr Pro Tyr Ala Met Ser Asn  
1 5 10

<210> 140  
<211> 10  
<212> PRT  
<213> ARTIFICIAL

<220>  
<223> CDR-H3 VARIANT 5  
<400> 140

Asp Gly Tyr Tyr Pro Tyr Ala Met Ala Asn  
1 5 10

<210> 141  
<211> 10  
<212> PRT  
<213> ARTIFICIAL

<220>  
<223> CDR-H3 VARIANT 6  
<400> 141

Asp Gly Tyr Tyr Pro Tyr Ala Leu Asp Asn  
1 5 10

<210> 142  
<211> 112  
<212> PRT  
<213> ARTIFICIAL

&lt;220&gt;

&lt;223&gt; VARIABLE LIGHT CHAIN OF CL-89

&lt;400&gt; 142

Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ser Val Ser Leu Gly  
 1 5 10 15  
 Glu Arg Ala Thr Ile Asn Cys Arg Ala Ser Lys Ser Val Asp Ser Tyr  
 20 25 30  
 Gly Asn Ser Phe Met His Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro  
 35 40 45  
 Lys Leu Leu Ile Tyr Leu Ala Ser Asn Leu Glu Ser Gly Val Pro Asp  
 50 55 60  
 Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser  
 65 70 75 80  
 Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln Asn Asn  
 85 90 95  
 Glu Asp Pro Arg Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg  
 100 105 110

&lt;210&gt; 143

&lt;211&gt; 118

&lt;212&gt; PRT

&lt;213&gt; ARTIFICIAL

&lt;220&gt;

&lt;223&gt; VARIABLE HEAVY CHAIN CL-276G

&lt;400&gt; 143

Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr Gln  
 1 5 10 15  
 Thr Leu Thr Leu Thr Cys Thr Val Ser Gly Phe Ser Leu Ser Ala Tyr  
 20 25 30  
 Ser Val Asn Trp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu Trp Leu  
 35 40 45  
 Ala Met Ile Trp Gly Asp Gly Lys Ile Val Tyr Asn Ser Ala Leu Lys  
 50 55 60  
 Ser Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val Val Leu  
 65 70 75 80  
 Thr Met Thr Asn Met Asp Pro Val Asp Thr Ala Thr Tyr Tyr Cys Ala  
 85 90 95  
 Gly Asp Gly Tyr Tyr Pro Tyr Ala Met Asp Asn Trp Gly Gln Gly Ser  
 Page 39

100

105

110

Leu Val Thr Val Ser Ser  
115

<210> 144  
<211> 112  
<212> PRT  
<213> ARTIFICIAL

<220>  
<223> VARIABLE LIGHT CHAIN OF RL-36  
<400> 144

Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ser Val Ser Leu Gly  
1 5 10 15

Glu Arg Ala Thr Ile Asn Cys Arg Ala Ser Lys Ser Val Asp Ser Tyr  
20 25 30

Gly Asn Ser Phe Met His Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro  
35 40 45

Lys Leu Leu Ile Tyr Leu Ala Ser Asn Leu Glu Ser Gly Val Pro Asp  
50 55 60

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser  
65 70 75 80

Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln Asn Asn  
85 90 95

Glu Asp Pro Arg Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg  
100 105 110

<210> 145  
<211> 118  
<212> PRT  
<213> ARTIFICIAL

<220>  
<223> VARIABLE HEAVY CHAIN RL-36  
<400> 145

Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr Gln  
1 5 10 15

Thr Leu Thr Leu Thr Cys Thr Gly Ser Gly Phe Ser Leu Ser Ala Tyr  
20 25 30

Ser Val Asn Trp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu Trp Leu  
35 40 45

Ala Met Ile Trp Gly Asp Gly Lys Ile Val Tyr Asn Ser Ala Leu Lys  
50 55 60



Ser Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val Val Leu  
65 70 75 80

Thr Met Thr Asn Met Asp Pro Val Asp Thr Ala Thr Tyr Tyr Cys Ala  
85 90 95

Val Asp Gly Tyr Tyr Pro Tyr Ala Met Asp Asn Trp Gly Gln Gly Ser  
100 105 110

Leu Val Thr Val Ser Ser  
115

<210> 146  
<211> 118  
<212> PRT  
<213> ARTIFICIAL

<220>  
<223> VARIABLE HEAVY CHAIN RL-19

<400> 146

Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr Gln  
1 5 10 15

Thr Leu Thr Leu Thr Cys Thr Ser Ser Gly Phe Ser Leu Ser Ala Tyr  
20 25 30

Ser Val Asn Trp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu Trp Leu  
35 40 45

Ala Met Ile Trp Gly Asp Gly Lys Ile Val Tyr Asn Ser Ala Leu Lys  
50 55 60

Ser Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val Val Leu  
65 70 75 80

Thr Met Thr Asn Met Asp Pro Val Asp Thr Ala Thr Tyr Tyr Cys Ala  
85 90 95

Leu Asp Gly Tyr Tyr Pro Tyr Ala Met Asp Asn Trp Gly Gln Gly Ser  
100 105 110

Leu Val Thr Val Ser Ser  
115

<210> 147  
<211> 118  
<212> PRT  
<213> ARTIFICIAL

<220>  
<223> VARIABLE HEAVY CHAIN RL-11

<400> 147

Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr Gln  
 1 5 10 15  
 Thr Leu Thr Leu Thr Cys Thr Thr Ser Gly Phe Ser Leu Ser Ala Tyr  
 20 25 30  
 Ser Val Asn Trp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu Trp Leu  
 35 40 45  
 Ala Met Ile Trp Gly Asp Gly Lys Ile Val Tyr Asn Ser Ala Leu Lys  
 50 55 60  
 Ser Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val Val Leu  
 65 70 75 80  
 Thr Met Thr Asn Met Asp Pro Val Asp Thr Ala Thr Tyr Tyr Cys Ala  
 85 90 95  
 Val Asp Gly Tyr Tyr Pro Tyr Ala Met Asp Asn Trp Gly Gln Gly Ser  
 100 105 110  
 Leu Val Thr Val Ser Ser  
 115

<210> 148  
 <211> 118  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> VARIABLE HEAVY CHAIN RL-8

<400> 148

Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr Gln  
 1 5 10 15  
 Thr Leu Thr Leu Thr Cys Thr Thr Ser Gly Phe Ser Leu Ser Ala Tyr  
 20 25 30  
 Ser Val Asn Trp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu Trp Leu  
 35 40 45  
 Ala Met Ile Trp Gly Asp Gly Lys Ile Val Tyr Asn Ser Ala Leu Lys  
 50 55 60  
 Ser Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val Val Leu  
 65 70 75 80  
 Thr Met Thr Asn Met Asp Pro Val Asp Thr Ala Thr Tyr Tyr Cys Ala  
 85 90 95  
 Ser Asp Gly Tyr Tyr Pro Tyr Ala Met Asp Asn Trp Gly Gln Gly Ser  
 100 105 110

Leu Val Thr Val Ser Ser  
115

<210> 149  
<211> 118  
<212> PRT  
<213> ARTIFICIAL

<220>  
<223> VARIABLE HEAVY CHAIN RL-45  
<400> 149

Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr Gln  
1 5 10 15

Thr Leu Thr Leu Thr Cys Thr Thr Ser Gly Phe Ser Leu Ser Ala Tyr  
20 25 30

Ser Val Asn Trp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu Trp Leu  
35 40 45

Ala Met Ile Trp Gly Asp Gly Lys Ile Val Tyr Asn Ser Ala Leu Lys  
50 55 60

Ser Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val Val Leu  
65 70 75 80

Thr Met Thr Asn Met Asp Pro Val Asp Thr Ala Thr Tyr Tyr Cys Ala  
85 90 95

Thr Asp Gly Tyr Tyr Pro Tyr Ala Met Asp Asn Trp Gly Gln Gly Ser  
100 105 110

Leu Val Thr Val Ser Ser  
115

<210> 150  
<211> 112  
<212> PRT  
<213> ARTIFICIAL

<220>  
<223> VARIABLE LIGHT CHAIN RL-36-L1,59  
<400> 150

Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ser Val Ser Leu Gly  
1 5 10 15

Glu Arg Ala Thr Ile Asn Cys Arg Ala Ser Lys Ser Val Asp Ser Tyr  
20 25 30

Gly Gln Ser Phe Met His Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro  
35 40 45

Lys Leu Leu Ile Tyr Leu Ala Ser Asn Leu Glu Ser Gly Val Pro Asp  
 50 55 60

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser  
 65 70 75 80

Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln Asn Asn  
 85 90 95

Glu Asp Pro Arg Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg  
 100 105 110

<210> 151  
 <211> 118  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> VARIABLE HEAVY CHAIN RL36-L1,59  
 <400> 151

Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr Gln  
 1 5 10 15

Thr Leu Thr Leu Thr Cys Thr Gly Ser Gly Phe Ser Leu Ser Ala Tyr  
 20 25 30

Ser Val Asn Trp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu Trp Leu  
 35 40 45

Ala Met Ile Trp Gly Asp Gly Lys Ile Val Tyr Asn Ser Ala Leu Lys  
 50 55 60

Ser Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val Val Leu  
 65 70 75 80

Thr Met Thr Asn Met Asp Pro Val Asp Thr Ala Thr Tyr Tyr Cys Ala  
 85 90 95

Val Asp Gly Tyr Tyr Pro Tyr Ala Met Asp Asn Trp Gly Gln Gly Ser  
 100 105 110

Leu Val Thr Val Ser Ser  
 115

<210> 152  
 <211> 248  
 <212> PRT  
 <213> ARTIFICIAL

<220>  
 <223> SINGLE CHAIN FV  
 <400> 152

Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr Gln  
 1 5 10 15  
 Thr Leu Thr Leu Thr Cys Thr Val Ser Gly Phe Ser Leu Ser Ala Tyr  
 20 25 30  
 Ser Val Asn Trp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu Trp Leu  
 35 40 45  
 Ala Met Ile Trp Gly Asp Gly Lys Ile Val Tyr Asn Ser Ala Leu Lys  
 50 55 60  
 Ser Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val Val Leu  
 65 70 75 80  
 Thr Met Thr Asn Met Asp Pro Val Asp Thr Ala Thr Tyr Tyr Cys Ala  
 85 90 95  
 Gly Asp Gly Tyr Tyr Pro Tyr Ala Met Asp Asn Trp Gly Gln Gly Ser  
 100 105 110  
 Leu Val Thr Val Ser Ser Gly Gly Ser Ser Arg Ser Ser Ser Ser Gly  
 115 120 125  
 Gly Gly Gly Ser Gly Gly Gly Gly Asp Ile Val Met Thr Gln Ser Pro  
 130 135 140  
 Asp Ser Leu Ser Val Ser Leu Gly Glu Arg Ala Thr Ile Asn Cys Arg  
 145 150 155 160  
 Ala Ser Lys Ser Val Asp Ser Tyr Gly Asn Ser Phe Met His Trp Tyr  
 165 170 175  
 Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu Ile Tyr Leu Ala Ser  
 180 185 190  
 Asn Leu Glu Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly  
 195 200 205  
 Thr Asp Phe Thr Leu Thr Ile Ser Ser Val Gln Ala Glu Asp Val Ala  
 210 215 220  
 Val Tyr Tyr Cys Gln Gln Asn Asn Glu Asp Pro Arg Thr Phe Gly Gly  
 225 230 235 240  
 Gly Thr Lys Val Glu Ile Lys Arg  
 245